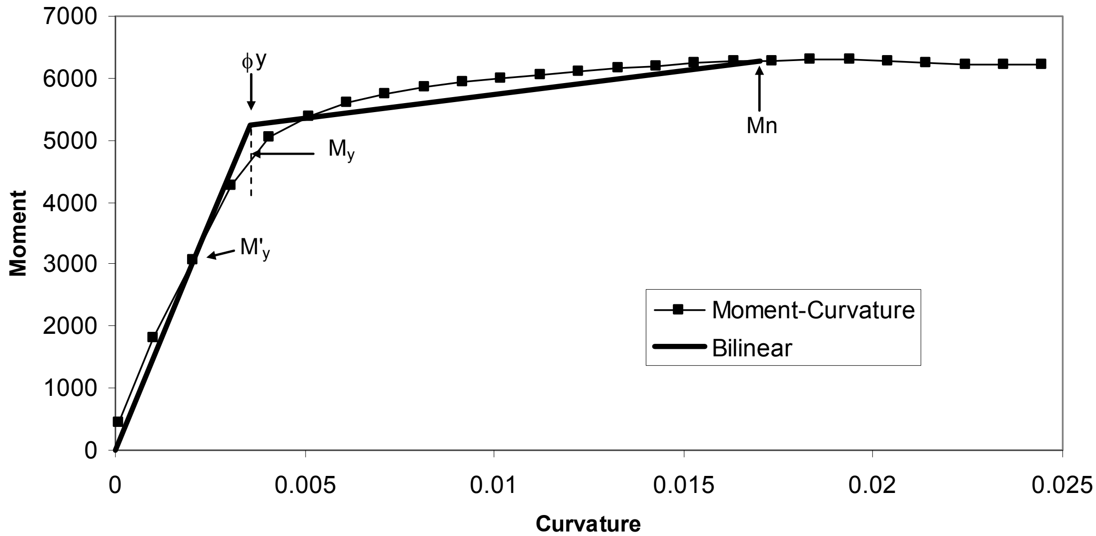

Figure 111.Moment-Curvature response of drilled-shafts in the Wake County Bridge

Table 29. Transverse yield displacement based on equivalent model parameters

Bridge	Pile Type	ε_y	h or D (in)	Le (ft)	Δ_y (in)	Δ_y (in) Mpier
Robeson	H14x73	0.0022	14	14.50	1.59	4.56
Northampton	24in SPP	0.0022	24	22.20	2.17	2.62
Halifax	18in S-PCP	0.0015	18	22.60	2.04	2.18
Rowan	RC Drilled Shaft	0.0022	48	36.30	2.90	5.40
Wake	RC Drilled Shaft	0.0022	48	65.62	9.47	not found
Pitt	RC Drilled Shaft	0.0022	60	73.40	9.48	not found
Bridge		ε_y	**h or D (m)**	**Le (m)**	Δ_y **(m)**	Δ_y **(m) Mpier**
Washington	406mm S-PCP	0.0015	0.406	6.28	0.10	0.07

Table 30. Longitudinal yield displacement based on equivalent model parameters

Bridge	Pile Type	ε_y	h or D (in)	Le (ft)	Δ_y (in)	Δ_y (in) Mpier
Robeson	H14x73	0.0022	14	10.80	1.76	13.00
Northampton	24in SPP	0.0022	24	16.20	2.31	8.14
Halifax	18in S-PCP	0.0015	18	16.80	2.26	4.06
Rowan	RC Drilled Shaft	0.0022	48	22.90	2.31	11.80
Wake	RC Drilled Shaft	0.0022	54	96.52	36.44	not found
Pitt	RC Drilled Shaft	0.0022	60	84.20	24.96	not found

Based on these results, it can be concluded that a conservative estimate of yield displacement, that can be used as a design limit state, can be easily calculated with Equation 18 and Equation 19 for free head and fixed head response respectively. The yield displacement is directly proportional to the square of the equivalent length and inversely proportional to the diameter of the section. For the seven bridges studied in this